

Man vs. Machine – How good are Clinicians at Predicting Perioperative Risk?

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The Portsmouth-Physiology and Operative Severity Score for the enUmeration of Mortality (P-POSSUM), Surgical Risk Scale (SRS), and Surgical Outcome Risk Tool (SORT) have all previously demonstrated good performance in predicting 30-day mortality in general surgical patients.^{1,2} However, we do not yet know how accurate these tools are compared to clinical judgement alone.

We performed a planned analysis of data from 22,993 patients undergoing inpatient surgery included the Second Sprint National Anaesthesia Project: Epidemiology of Critical Care provision after Surgery (SNAP-2: EPICCS) study.³ Surgical and anaesthesia teams were asked preoperatively to predict their patients' risk of 30-day mortality (divided into bands of risk), and detail how that estimate was derived. Calibration curve and Receiver Operating Characteristic (ROC) curve analysis was performed, comparing the performance of clinician predictions to risk estimates obtained from the P-POSSUM, SRS and SORT risk prediction models.

Mortality risk predictions for 11,089 patients (48.2%) were made solely using clinical assessment. Clinicians performed well with good discrimination (Area under the ROC curve, AUROC = 0.881, 95% CI: 0.841 to 0.916), tended to overpredict risk at higher risk bands. They fared well (Figure 1, red) against risk predictions based on SORT (AUROC = 0.920, 95% CI: 0.892 to 0.947), P-POSSUM (AUROC = 0.892, 95% CI: 0.861 to 0.922), and SRS (AUROC = 0.858, 95% CI: 0.819 to 0.897).

Clinicians predict 30-day mortality risk as well as the risk stratification tools tested. However, clinician predictions tended to overestimate risk at higher ranges of risk.

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References

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ROC Curves

